

3. Specification

The Examiner has indicated that the current title of the invention is too long. Applicant's suggest the following shorter title: "Methods for Protecting Silica-Containing Articles In Optical Fiber Manufacture." This shorter title addresses the fact that only method claims are now included in the present application.

4. § 102 Rejections

The Examiner has rejected claims 1-10, 12-19, 22-27 and 29-31 under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent No. 02-258643 (the Tsuji et al. patent).

The Examiner asserts that Tsuji et al. teaches a method of protecting a silica-containing article used in the manufacture of an optical fiber and that the protective layer is applied to a consolidated glass surface. In addition, Examiner asserts Tsuji et al. also teaches all of the limitations of claims 3 -10, 12-17, 19, 22-27 and 29-31.

The Examiner has also rejected claims 1-2, 5-7, 18-19 and 22-24 under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 4,473,599 (the Elion '599 patent).

The Examiner states that Elion teaches a method of protecting a silica-containing article used in the manufacture of an optical fiber and that Elion teaches all the limitations of claims 2, 5-7, 18-19 and 22-24.

Respectfully, the 102(b) rejections of claims based upon the Tsuji et al. and the Elion '599 patent are traversed. Claim 1, as amended, makes it clear that the method includes applying a protective organic layer and then removing, by cleaning, particulates from the protective layer; and

ablating by heating the protective layer during subsequent processing of the silica-containing article.

In the Tsuji et al. Patent, the protective layer is removed only by peeling (See pg. 4, lines 4-5 of the Tsuji et al. Patent). There is no teaching or suggestion in Tsuji et al. that the layer should be first cleaned, and then ablated by heating. In Elion, the layer is not removed at all and is also not organic as is now claimed. Thus, in Elion and Tsuji et al., 1) the particulates are not removed from the protective layer by cleaning, and 2) the layer is then not ablated by heating. Respectfully, since at least these two elements are missing, the 102(b) rejection of claim 1 should be withdrawn. Further, the 102(b) rejection of claims 2, 4, 8-12, 14, 16-21, and 25-30 and should be withdrawn for at least these reasons. Claims 3, 5-7, 13, 15, 22-24 and 31 have been cancelled.

5. § 103 Rejections

The Examiner has rejected claims 32-33 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Japanese Patent No. 02-258643 (Tsuji et al.) as applied to claims 1, 2 and 18 and further in view of US Patent No. 4,973,345 (France) or German Patent No. 28 53,873 (Grabmaier).

The Examiner asserts that Tsuji et al. teaches all the limitations of claims 32-33 and asserts that France and Grabmaier teach that it is desirable to prevent contamination of the optical fiber preform in the handling/process steps up to and immediately prior to drawing the optical fiber from the finished preform.

The 103(a) rejection is respectfully traversed. France '345 teaches etching the surface of the preform to remove surface contamination and then applying a coating of (non-organic). chalcogenide glass. Grabmaier '873 teach carefully chemically cleaning and flame polishing the surfaces of the preform just prior to draw. None of the references teach or suggest the combination of applying a protective organic layer, removing particulates from a protective layer on the article, and then ablating the layer by heat. Removal of particulates from the coating prior to ablating was found by the inventors to have a marked improvement in the fiber break rate. It would not be obvious to applying a protective organic layer, remove particulates from a protective layer on the article, and then ablating the layer by heat absent some teaching or suggestion to do so. Claims 32 and 33 are allowable for at least these reasons.

6. Obviousness-Type Double Patenting

The Examiner states that claims 1-16 and 18-32 are provisionally rejected as being unpatentable over claims 1-28 of co-pending application No. 09/569,562. Claims 17 and 33 are rejected based upon 09/569,562 in vie of Tsuji et al. In reviewing MPEP 804 1.B regarding obviousness-type double patenting rejections between two applications filed by a common assignee, the courts have sanctioned making the applicant aware of potential double patenting issues by allowing provisional double patenting rejections. This allows the party to address the merits of the rejection during the pendency of the applications. However, it seems in this case, that the appropriate action is to address the merits of the double patenting rejection only in the later filed case (09/569,562). Applicant's recognize that the Examiner should continue to make the rejection until the present case is in a condition for allowance (other than for the provisional double patenting issue) and then Examiner should withdraw the rejection and permit the present application to issue into a patent while converting the

provisional rejection in the other case (the 09/569,562) into an actual double patenting rejection which then will be addressed in that later filed case. Note also, it is improper to reject, based upon obviousness, an earlier filed case based upon a later filed application. This is because any determination of obviousness must be made at the time of filing of the first case.

7. New Claims

New claims 50-58 have been added.

Claim 50 is allowable because there is no teaching or suggestion to coat a silica-containing article used in the manufacture of optical fiber with a protective layer comprising a silane. Claims 51-53 are allowable for at least this reason. No new matter is added. Support is found in originally submitted claim 12 and page 7, lines 1-7.

Claim 53 is allowable because there is no teaching or suggestion to coat a silica-containing article used in the manufacture of optical fiber with a protective layer comprising an alkyl ammonium compound, an aryl ammonium compound, or a wax. No new matter is added. Support is found in originally submitted claim 12 and page 7, lines 8-14.

Claim 54 is allowable because there is no teaching or suggestion to coat a silica-containing article used in the manufacture of optical fiber with a protective and then remove, by washing, the protective layer subsequent to further processing. Claims 55-57 are allowable for at least this reason. No new matter is added. Support is found on page 6, lines 1-6.

Claim 58 is allowable because there is no teaching or suggestion to apply a protective organic layer to the silica-containing preform; removing, by cleaning, particulates from the protective layer; and ablating by heating the protective layer during subsequent drawing of the silica-containing preform. No new matter is added. Support is found in originally submitted claims 1, 18, 19 and 20 and page 5, lines 10-20, and page 7-15.

8. Other Cited References

The prior art made of record and not relied upon is no more relevant to the invention as now claimed than the other references relied upon. In particular, US 6,189,341 teaches an inorganic coating and the coating is not ablated by heat. JP 04-065327 teaches applying a Ti

alkoxide sol-gel to form a film on the surface of the preform. The gel is then glassified to provide a Ti-doped coating. Note that the layer in JP 04-065327 is not ablated by heat.

9. Conclusion

Based upon the above amendments, remarks, and papers of record, Applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests reconsideration of the pending claims 1,2, 4, 8-12, 14, 16-21, 25-30, 32-33, and 50-58 and a prompt Notice of Allowance thereon.

Applicant believes that a two month extension of time is necessary to make this Response timely. A petition for an extension of time is proved herewith. Should Applicant be in error, Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Randall S. Wayland at 607-974-0463.

Respectfully submitted,

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VERSION OF MARKINGS TO SHOW CHANGES MADE

In the Specification

Please change the title from "Methods For Protecting Silica-Containing Article And Inhibiting Breaks During Drawing of Optical Fiber, And Silica-Containing Article Protected Against Break-Inducing Particulates" to --Methods for Protecting Silica-Containing Article In Optical Fiber Manufacture--.

In the Claims

[(Amended) 1. A method of protecting a silica-containing article used in the manufacture of an optical fiber, the method comprising the steps of:

providing a silica-containing article used in the manufacture of an optical fiber; **[and]**
applying a protective organic layer to the silica-containing article;

removing, by cleaning, particulates from the protective layer; and
ablating the protective layer by heating during subsequent processing of the silica-
containing article.

[3. The method of claim 2, wherein the protective layer ablates during subsequent processing of the silica-containing article.]

(Amended) 4. The method of claim 2, wherein the protective layer leaves essentially no detrimental inorganic residue after the step of ablating.

[5. The method of claim 2, wherein the protective layer inhibits bonding of particulates to the silica-containing article.]

[6. The method of claim 5, wherein the protective layer inhibits bonding by occupying active sites on the silica-containing article such that particulates cannot bond to those active sites.]

[7. The method of claim 6, wherein the active sites include groups that will form a SiMO_x compound, where M is a metal.]

[13. The method of claim 2, further comprising the step of removing particulates from the protective layer.]

(Amended) 14. The method of claim 2, [further comprising the step of removing the protective layer from the silica-containing article during further processing] wherein the step of removing particulates is accomplished by

wiping with a substrate containing isopropyl alcohol;

blowing with super critical CO_2 ; or

rinsing in liquid water.

[15. The method of claim 2, further comprising the step of removing the protective layer from the silica-containing article before fiber draw.]

[22. The method of claim 18, wherein the protective layer inhibits bonding of particulates to the fiber preform.]

[23. The method of claim 22, wherein the protective layer inhibits bonding by occupying active sites on the fiber preform such that particulates cannot bond to those active sites.]

[24. The method of claim 23, wherein the active sites include groups that will form a SiMO_x compound, where M is a metal.]

(Amended) 30. The method of claim 18, further comprising the step of removing particulates from the protective layer prior to the step of ablating the protective layer.

[31. The method of claim 18, further comprising the step of removing the protective layer from the fiber preform before fiber draw.]

(Amended) 32. The method of claim 18, wherein the fiber preform is formed by adding additional soot materials by an outside vapor deposition process onto a core cane and a core blank, the method further comprising the steps of applying a protective layer to at least one of the core cane and the core blank and removing particulates from the protective layer on the at least one of the core cane and the core blank prior to to the step of ablating.

(Amended) 33. The method of claim 18, wherein the fiber preform is formed by an inside vapor deposition process from a silica-containing tube, the method further comprising the steps of applying a protective layer to the silica-containing tube and removing particulates from the protective layer on the silica-containing tube prior to to the step of ablating.

34-49. Withdrawn

Please add new claims 50-58 as follows:

50. A method of protecting a silica-containing article used in the manufacture of an optical fiber, the method comprising the steps of:
_____ providing a silica-containing article used in the manufacture of an optical fiber; and
_____ applying a protective layer comprising a silane to a consolidated glass surface of the silica-containing article.

51. The method of claim 50, wherein the silane includes at least one of a hydrocarbon silane and a fluorocarbon silane.

52. The method of claim 50, wherein the silane includes at least one of epoxy functional silanes, acrylate functional silane, amine functional silane, thiol functional silane, and phenyl functional silane.

53. A method of protecting a silica-containing article used in the manufacture of an optical fiber, the method comprising the steps of:
_____ providing a silica-containing article used in the manufacture of an optical fiber; and
_____ applying a protective layer comprising an alkyl ammonium compound, an aryl ammonium compound, or a wax to a consolidated glass surface of the silica-containing article.

54. A method of protecting a silica-containing article used in the manufacture of an optical fiber, the method comprising the steps of:

_____ providing a silica-containing article used in the manufacture of an optical fiber;
_____ applying a protective layer to a consolidated glass surface of the silica-containing article; and
_____ at least partially removing, by washing, the protective layer during subsequent processing of the silica-containing article.

55. The method of claim 54, wherein the step of washing is accomplished with water or a solvent.

56. The method of claim 54, wherein the protective layer is a water-soluble polymer.

57. The method of claim 54, wherein the protective layer is polyvinyl alcohol or hydroxymethylcellulose.

58. A method of protecting a silica-containing preform used in the manufacture of an optical fiber, the method comprising the steps of:

_____ providing a silica-containing preform used in the manufacture of an optical fiber;
_____ applying a protective organic layer to the silica-containing preform;
removing, by cleaning, particulates from the protective layer; and
ablating by heating the protective layer during subsequent drawing of the silica-containing preform.